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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,725

11/08/2005

Rudolf Bonsch

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EXAMINER

PO, MING CHEUNG

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

07/15/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/537,725	Applicant(s) BONSCH ET AL.	
	Examiner MING CHEUNG PO	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This is the response to amendment for application 10/537725 filed on 3/25/2009.
2. Claims 1-3 are pending and have been fully considered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims are rejected under 35 U.S.C. 103(a) as being unpatentable over JOHNSON (U.S. 5,520,708) in view of KOVACS (WO 03/040081).

JOHNSON teaches a method to reduce the crystallization temperature of a mixture of a fatty acid oil ester-petroleum distillate fuel blend. JOHNSON teaches in lines 15 – 18 of column 3 that the esters used are prepared by transesterification of native oils. Preferably, the esters are taught in lines 19 - 32 of column 3 to be prepared by a type of **transesterification** known as alcoholysis in which the acyl groups in the triglycerides of the oils are exchanged with an alcohol such as **methanol**, so that nearly all the acyl groups are recovered as methyl esters. JOHNSON further teaches that an acid such as **sulfuric acid or hydrogen chloride** may be used as the acid catalyst when large amounts of free fatty acids are present in the oil.

JOHNSON teaches an example in lines 65 – 67 of column 3 and lines 1 – 14 of column 4 where a basic catalyst of sodium alkoxide is used and stirred with the

reactants at **32°C (between 25 and 60°C)**.

JOHNSON does not seem to explicitly state that the methyl ester is intensively mixed at temperatures between 25 and 60°C with a strong acid to form an emulsion.

However, KOVACS teaches on the second paragraph of page 3 that the reaction that JOHNSON teaches is mixed and reacted in a static mixer and then the mixture is subjected to a high shear **(in-line mixing)** in the homogenizer to form an emulsion **(emulsion)**. The mixture still contains the acid catalyst **(strong acid)**.

JOHNSON further teaches that the reaction mixture was then extracted with hexane, washed with water **(subjected to a water wash)**, and the esters were obtained as the residue after evaporation of the solvent under vacuum **(subsequently dried)**.

In example 1, JOHNSON teaches that hexanes and water were added to the reaction mixture to induce a phase separation. The upper phase, an ester-rich layer, was washed with additional water and isolated until it became clear **(an ester layer separated from the emulsion formed is subjected to a thorough water wash)**. The solvent was then evaporated **(subsequently dried)**.

Regarding claim 3, JOHNSON does not appear to explicitly state the water wash is carried out in a wash column according to the counter current principle or by means of a mechanically intensive mixer.

However, it would be obvious to one of ordinary skill in the art to use a separatory funnel to perform the water washes. A separatory funnel is a wash column that utilizes the counter current principle to separate the organic layer and the aqueous layer.

One of obvious skill in the art would recognize that a separatory funnel is a common piece of equipment that is used in water washes.

Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Response to Arguments

5. Applicant's arguments filed 02/11/2009 have been fully considered but they are not persuasive. Applicant argues JOHNSON does not teach improving the long-term stability of biodiesel. However, since JOHNSON teaches all the steps of the process, there is no reason to believe that the process that JOHNSON teaches will not also improve the stability of the biodiesel fuel. Applicant is arguing that JOHNSON teaches a different process because JOHNSON does not specifically state adding the acidic catalyst in a different step after the ester is formed. However, since the acidic catalyst is a catalyst, it still remains the same structurally after the ester is formed. Therefore, the acid is present when the ester is mixed. Applicant is further arguing that the acids used "is to split undesired soaps and involves completely different mechanisms". However, JOHNSON teaches the use of the same acids. There is no reason to believe that the same acids in the same conditions would somehow behave differently. Applicant is further arguing that JOHNSON performs all the steps of purification during the transesterification rather than after the ester is formed. Applicant is arguing that the invention is the "downstream purification step" and not the transesterification step. Examiner disagrees. JOHNSON teaches an example in lines 19-31 of column 4 where the ester is formed by inline mixing. However, by design of the experiment, the methyl

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ester that is formed is also mixed along with the catalyst and therefore would also form an emulsion. Water and hexanes are added and the ester-rich layer is subjected to a further water wash while discarding the aqueous layer. In the alternative, JOHNSON does not mention an emulsion specifically. KOVACS teaches running a transesterification and separation experiment would be shorter by subjecting the mixture to high shear mixing. Although KOVACS addresses two different patents, only one is concerned with the production of biological oils. It would be obvious to one of ordinary skill in the art that KOVACS is addressing the process that JOHNSON teaches and why it would be beneficial to use a static mixer. Applicant further argues that there would be a difference to conduct the phase separation during the transesterification step vs after the transesterification step to remove impurities. A phase separation done in either step will remove impurities. Specifically, KOVACS teaches in page 4 that the emulsion formed in the homogenizer enables transesterification to proceed to equilibrium before the emulsion segregates. The emulsion containing the impurities settles out into different phases. KOVACS goes on to state that to obtain a product with appropriate viscosity, the apolar phase should be reacted again. Furthermore, in the alternative, it would be obvious to one of ordinary skill to perform the same purification step again after the ester is formed. Furthermore, applicant further relies on limitations not found in the claims.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MING CHEUNG PO whose telephone number is (571)270-5552. The examiner can normally be reached on 9:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571)272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ming Cheung Po
Patent Examiner

/Cephia D. Toomer/

Primary Examiner, Art Unit 1797